PATENT ALLY, DKL No. AMAT/3049.X1/CPES/DT/PJS

- 3. The method of claim 1, wherein the hydrogen is provided to the processing chamber in a mixture of about 95% by volume of helium and about 5% by volume of hydrogen.
- 4. The method of claim 1, further comprising increasing the helium content to increase etching of the patterned substrate surface.
- 5. The method of claim 1, wherein the substrate surface comprises silicon oxide or silicon nitride.
- 6. The method of claim 1, wherein the plasma is capacitively and inductively powered.
- 7. The method of claim 1, wherein the gas mixture is introduced into the processing chamber to establish a pressure from about 1 mTorr to about 200 mTorr.
- 8. A method for processing a substrate in a processing chamber, comprising:
- (a) exposing a patterned substrate surface to a plasma generated from a gas mixture consisting of argon, helium and hydrogen; and
- (b) increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon.
- 10. The method of claim 8, wherein the hydrogen is provided to the processing chamber in a mixture of about 95% by volume of helium and about 5% by volume of hydrogen.
- 11. The method of claim 8, wherein the substrate surface comprises silicon oxide or silicon nitride.

Page 2

PATENT Atty. Dkt. No. AMAT/3049.X1/CPES/DT/PJS

- 12. The method of claim 8, wherein the plasma is capacitively and inductively powered.
- 13. The method of claim 13, wherein the gas mixture is introduced into the processing chamber to establish a pressure from about 1 mTorr to about 200 mTorr.
- 14. A method for processing a substrate, comprising:
- (a) exposing a patterned substrate surface to a plasma generated from a gas mixture comprising argon, helium and hydrogen in a processing chamber, wherein the plasma is capacitively and inductively powered; and
- (b) increasing the helium content to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon.
- 15. The method of claim 14, wherein the hydrogen is provided to the processing chamber in a mixture of about 95% by volume of helium and about 5% by volume of hydrogen.
- 16. The method of claim 15, wherein the substrate surface comprises silicon oxide or silicon nitride.
- 17. The method of claim 14, wherein the gas mixture is introduced into the processing chamber to establish a pressure from about 1 mTorr to about 200 mTorr.
- 18. The method of claim 1, wherein the gas mixture comprises between about 25% and about 75% by volume of argon.
- 19. The method of claim 8, wherein the gas mixture comprises between about 25% and about 75% by volume of argon.
- 20. The method of claim 14, wherein the gas mixture comprises between about 25% and about 75% by volume of argon.

Page 3

Atty, Dkt. No. AMAT/3049.X1/CPES/DT/PJS

- The method of claim 1, wherein the plasma is generated by delivering a power 21. level of between about 10 watts and about 500 watts to the processing chamber.
- The method of claim 8, wherein the plasma is generated by delivering a power 22. level of between about 10 watts and about 500 watts to the processing chamber.
- The method of claim 14, wherein the plasma is generated by delivering a power level of between about 10 watts and about 500 watts to the processing chamber.
- 24. A method for processing a substrate in a processing chamber, comprising exposing a patterned substrate surface to a plasma generated from a gas mixture consisting of less than 75% by volume of argon and a mixture of about 95% by volume of helium and about 5% by volume of hydrogen.
- The method of claim 24, wherein the plasma is capacitively and inductively 25. powered.
- The method of claim 24, further comprising increasing the helium content to increase etching of the patterned substrate surface.
- The method of claim 24, wherein the substrate surface comprises silicon oxide or 27. silicon nitride.
- The method of claim 24, wherein the gas mixture is introduced into the 28. processing chamber to establish a pressure from about 1 mTorr to about 200 mTorr.
- The method of claim 24, wherein the gas mixture comprises between about 25% and about 75% by volume of argon.

PATENT Atty. Dkt. No. AMAT/3049.X1/CPES/DT/PJS

30. The method of claim 24,-wherein the plasma is generated by delivering a power level of between about 10 watts and about 500 watts to the processing chamber.

Please add the following new claims 31-40:

- 31. (New) A method for processing a substrate in a processing chamber, comprising:
- (a) exposing a patterned substrate surface at a pressure between about 5 mTorr and about 20 mTorr to a plasma generated from a gas mixture consisting of argon, helium and hydrogen at a power level between about 300 watts and about 450 watts; and
- (b) increasing the helium content of the plasma to increase etching of the patterned substrate surface, wherein the gas mixture comprises less than about 75% by volume of argon.
- 32. (New) The method of claim 31, wherein the patterned substrate comprises a feature having an aspect ratio great than about 4 to 1.
- 33. (New) The method of claim 31, wherein the gas mixture comprises about 50% by volume of argon, about 48% by volume of helium, and about 2% by volume of hydrogen.
- 34. (New) The method of claim 31, wherein the gas mixture comprises about 25% by volume of argon, about 71% by volume of helium, and about 4% by volume of hydrogen.
- 35. (New) The method of claim 31, wherein increasing the helium content of the plasma decreases the argon content of the plasma.
- 36. (New) A method for processing a substrate in a processing chamber, comprising:

Page 5